Claims

1. Optical packet node for receiving and transmitting optical packets, comprising:

   a multiwavelength band splitting device for splitting received optical packes transmitted via multiwavelength bands into at least three groups, each group including one multiwavelength band,

   a multiwavelength band combining device for combining said at least three groups of multiwavelength bands,

   at least two optical packet add drop multiplexers, each optical packet add drop multiplexer being placed between said multiwavelength band splitting device and said multiwavelength band combining device, and each optical packet add drop multiplexer serving to add and to drop at least one individual wavelength to a respective group of a multiwavelength band, and

   a load balancing stage being connected to at least two of said optical packet add drop multiplexers, to provide an interconnection between at least two wavelength bands.

2. Optical packet node as claimed in claim 1, wherein said load balancing stage includes an electric packet switch to provide a load balancing between the data packets to be added and transmitted and the available wavelength capacity.

3. Optical packet node as claimed in claim 1, wherein said Optical packet node further comprises at least two interface modules being connected to the load balancing stage to provide the data packets to be added and transmitted.

4. Optical packet node as claimed in claim 3, wherein each of said interface modules provides packet format adaptation, classification, contension resolution, and resequencing.

5. Optical packet node as claimed in claim 1, wherein said multiwavelength band splitting device includes a demultiplexer, a filter, or a coupler, and that said multiwavelength band combining device includes a multiplexer, or a combiner.

6. Optical packet node as claimed in claim 1, wherein the load balancing stage is telemetrically programmable.

7. Optical packet add drop multiplexer for receiving and transmitting optical packets and to add and to drop at least one individual wavelength to a group of one multiwavelength band comprising:

a drop stage to drop at least one received individual wavelength of said group of one multiwavelength band,

a transit stage to forward at least one received individual wavelength of said group of one multiwavelength band,

an add stage to add at least one individual wavelength to said group of one multiwavelength band, each added wavelength being unequal to each of the forwarded wavelengths,

a wavelength band coupler to forward X% of the optical signal power of the received optical packets to a first output, and to forward 100-X% of the

optical signal power of the received optical packets to a second output, the first output being connected to the transit stage and the second output being connected to the drop stage, and

a coupler to couple the output signals of the transit stage and the output signals of the add stage.

8. Optical packet add drop multiplexer as claimed in claim 7, wherein said transit stage comprises a series connection of

a multiwavelength band splitting device for splitting received optical packes transmitted via said group of one multiwavelength band into individual wavelengths,

a wavelength selector to select the wavelengths to be forwarded and the wavelengths not to be forwarded, and

a multiwavelength band combining device for combining said selected wavelengths to be forwarded, and

wherein said drop stage comprises a series connection of

a multiwavelength band splitting device for splitting received optical packes transmitted via said group of one multiwavelength band into individual wavelengths, and

a wavelength selector to select the wavelengths to be dropped and the wavelengths not to be dropped, and

wherein said add stage comprises a series connection of

a wavelength selector to select the wavelengths to be added and the wavelengths not to be added, and

a multiwavelength band combining device for combining said selected wavelengths to be added.

9. Optical packet add drop multiplexer as claimed in claim 8, wherein said optical packet add drop multiplexer further comprises a control unit to

control the selection of the wavelengths to be dropped, those to be forwarded, and those to be added.

10. Optical packet node as claimed in claim 1, wherein each of said optical packet add drop multiplexers consists of an optical packet add drop multiplexer as claimed in claim 7, and wherein a common synchronization and management unit provides synchronization and management to all said optical packet add drop multiplexers.

11. Optical packet node as claimed in claim 1, wherein instead of said at least two optical packet add drop multiplexers at least two optical packet cross-connects are used.

12. Optical packet node as claimed in claim 1, wherein instead of said at least two optical packet add drop multiplexers at least one optical packet cross-connect and at least one optical packet add drop multiplexer are used.

13. Optical packet node for receiving and transmitting optical packets, comprising:

a multiwavelength band splitting device for splitting received optical packes transmitted via multiwavelength bands into at least three groups, each group including one multiwavelength band,

a multiwavelength band combining device for combining said at least three groups of multiwavelength bands,

at least one optical packet add drop multiplexer, each optical packet add drop multiplexer being placed between said multiwavelength band splitting device and said multiwavelength band combining device, and each optical packet add drop multiplexer serving to add and to drop at least one individual wavelength to a respective group of a multiwavelength band, and

at least one optical packet cross-connect, each optical packet cross-connect being placed between said multiwavelength band splitting device and said multiwavelength band combining device, and each optical

packet cross-connect serving to switch at least one individual wavelength of a respective group of a multiwavelength band.